

DETAILED ACTION

This action is in response to the amendment, filed 12/3/2007, in which claims 13, 15-19, 28-29 and 32-35 were canceled, and claim 5 was amended. Currently, claims 2-3, 5-6, 14, 22-27, 30-31 and 36-41 are pending.

Applicant's arguments have been thoroughly reviewed, but are not persuasive for the reasons that follow. Any rejections and objections not reiterated in this action have been withdrawn. **This action is FINAL.**

Election/Restrictions

Applicant elected Group I without traverse in the reply filed on 12/22/2005. Currently, claims 2-3, 5-6, 14, 22-27, 30-31 and 36-41 are under consideration.

Priority

Applicant's claim for the benefit of a prior-filed application under 35 U.S.C. 119(e) or under 35 U.S.C. 120, 121, or 365(c) is acknowledged. Applicant has not complied with one or more conditions for receiving the benefit of an earlier filing date under 35 U.S.C. 119 as follows:

The later-filed application must be an application for a patent for an invention which is also disclosed in the prior application (the parent or original nonprovisional application or provisional application). The disclosure of the invention in the parent application and in the later-filed application must be sufficient to comply with the requirements of the first paragraph of 35 U.S.C. 112. See *Transco Products, Inc. v. Performance Contracting, Inc.*, 38 F.3d 551, 32 USPQ2d 1077 (Fed. Cir. 1994).

Art Unit: 1636

The disclosure of the prior-filed application, Application No. 60/338,441, fails to provide adequate support or enablement in the manner provided by the first paragraph of 35 U.S.C. 112 for one or more claims of this application. The prior-filed provisional application does not provide teach how to make and use an isolated transcription factor that comprises at least one zinc finger domain, wherein the presence of the transcription factor in a cell can alter the differentiation state of the cell. The provisional application does not describe proteins that comprise at least one zinc finger domain and can alter the differentiation state of a cell. The specification of the provisional application does not describe zinc fingers that can induce a neuronal phenotype in a vertebrate cell such as a neuroblastoma cell. The specification of the provisional application does not describe a protein comprising a first, second and third zinc finger domains, wherein the contacting residues of the first, second, and third domains at positions -1, 2, 3, and 6 of each domain respectively correspond to the motifs: QSNR, ZSNK, and CSNR, such as the zinc finger array of SEQ ID NO: 2.

Claims 2-3, 5-6, 14, 22-27, 30-31 and 36-41 have an effective filing date of 4/26/2002.

Response to Arguments - 35 USC § 102

[JAD1] The rejection of claims 2-3, 5, 22-27, 30-31 and 36-38 under 35 U.S.C. 102(e) as being anticipated by Kim et al has been withdrawn in view of Applicant's amendment to the claims in the reply filed 12/3/2007. The claims have been amended to impose a specific order on the first, second and third zinc fingers.

Art Unit: 1636

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 2-3, 5, 6, 14, 22-27, 30-31 and 36-41 are rejected under 35 U.S.C. 103(a) as being obvious over Kim et al (US Patent Application Publication NO. 2003/0165997 A1, cited on the IDS filed 11/26/2004; see the entire reference) in view of Liu et al (PNAS, Vol. 94, pages 5525-5530, May 1997, cited in a prior action; see the entire reference). This rejection was made in the Office action mailed 5/16/2007 and has been extended to claims 2-3, 5, 22-27, 30-31 and 36-38 in view of the amendment of claim 5 in the reply filed 12/3/2007.

The applied reference has a common inventor and assignee with the instant application. Based upon the earlier effective U.S. filing date of the reference, it constitutes prior art only under 35 U.S.C. 102(e). This rejection under 35 U.S.C. 103(a) might be overcome by: (1) a showing under 37 CFR 1.132 that any invention disclosed but not claimed in the reference was

Art Unit: 1636

derived from the inventor of this application and is thus not an invention “by another”; (2) a showing of a date of invention for the claimed subject matter of the application which corresponds to subject matter disclosed but not claimed in the reference, prior to the effective U.S. filing date of the reference under 37 CFR 1.131; or (3) an oath or declaration under 37 CFR 1.130 stating that the application and reference are currently owned by the same party and that the inventor named in the application is the prior inventor under 35 U.S.C. 104, together with a terminal disclaimer in accordance with 37 CFR 1.321(c). This rejection might also be overcome by showing that the reference is disqualified under 35 U.S.C. 103(c) as prior art in a rejection under 35 U.S.C. 103(a). See MPEP § 706.02(l)(1) and § 706.02(l)(2).

Kim et al teach a zinc finger polypeptide comprising a first, second, and third zinc finger domain, where each zinc finger domain is selected from the zinc fingers in Tables 5, 6 and 7. Kim et al teach the zinc fingers of QSNR and CSNK in Table 5, and the zinc finger of QSNK in Table 6. Further, Kim et al teach that the zinc fingers of QSNR, CSNK and QSNK each bind preferentially to the GAA sequence (e.g., Tables 5 and 6) and thus would be capable of regulating any sequences operatively linked to a regulatory region comprising the GAA sequence elements. Kim et al teach the following amino acid sequences for each of the QSNR, QSNK, and CSNK zinc fingers respectively: SEQ ID NO: 47, SEQ ID NO: 179 and SEQ ID NO: 23 (e.g., paragraphs [0104], [0314], [0350] and [0458]). SEQ ID NO: 47 of Kim et al is 100% identical to instant SEQ ID NO: 47. SEQ ID NO: 179 of Kim et al is 100% identical to instant SEQ ID NO: 162. SEQ ID NO: 23 of Kim et al is 100% identical to instant SEQ ID NO: 173. See the alignments in Exhibits I-III (mailed 5/16/2007). Further, Kim et al teach that the zinc finger domains are positioned adjacent to each other to form an array of zinc finger domains,

Art Unit: 1636

which is a polypeptide unit that is uninterrupted by other types of structural or functional protein domains (e.g., paragraph [0025]).

Kim et al do not teach a polypeptide that comprises amino acids 31-109 of instant SEQ ID NO: 2.

Liu et al teach the design of a linker peptide, TGEKP, to link zinc finger domains of synthetic zinc finger transcription factors (e.g., pages 5527-5528, Design of a Linker Peptide). Liu et al teach that the linker should be of general utility in the construction of zinc finger proteins with genome-specific addressing potential (e.g., page 5529, right column, 1st paragraph).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to polypeptide of Kim et al to specifically include the TGEKP linker sequence between zinc fingers 1 and 2 and zinc fingers 2 and 3 taught by Kim et al, where QSNR, QSNK, and CSNR are zinc fingers 1, 2 and 3, respectively, because Kim et al teach it is within the ordinary skill in the art to use an array of zinc finger proteins without any intervening domains and Liu et al teach the TGEKP linker sequence in order to link zinc finger domains for binding of DNA.

One would have been motivated to make such a modification in order to receive the expected benefit of designing a zinc finger polypeptide with the zinc fingers properly spaced such that they could bind a GAAGAAGAA DNA sequence as taught by Kim et al (Tables 5 and 6; Figure 2). Based upon the teachings of the cited references, the high skill of one of ordinary skill in the art, and absent any evidence to the contrary, there would have been a reasonable expectation of success to result in a polypeptide of amino acids 31-109 of SEQ ID NO: 2. See the alignment in Exhibit IV (mailed 5/16/2007), which compares the sequences of Kim et al

Art Unit: 1636

(SEQ ID NOS: 47, 179 and 23, respectively) linked with the TGEKP linker of Liu et al to amino acids 31 to 109 of instant SEQ ID NO: 2.

Response to Arguments - 35 USC § 103

With respect to the rejection of claims 6, 14 and 39-41 under 35 U.S.C. 103(a) as being obvious over Kim et al in view of Liu et al, Applicant's arguments filed 8/16/2007 have been fully considered but they are not persuasive.

The response notes that the rejection is based on the teachings of Kim et al. The response asserts that the rejection should be withdrawn for the same reasons discussed for the rejection of claims 2-3, 5, 22-27, 30-31 and 36-38 under 35 U.S.C. 102(e) as being anticipated by Kim et al. Specifically, the response asserts that the Kim et al reference does not disclose or suggest a transcription factor comprising a first, second, and third zinc finger domain having the QSNR, QSNK, and CSNR motifs in that order. This is not found persuasive, because Kim et al specifically teach polypeptides where a first zinc finger domain is N-terminal to a second domain and the second domain is N-terminal to the third domain, and where the first, second and third domains are selected from the domains in Tables 5, 6 and 7 (e.g., paragraphs [0025]-[0027]). Thus, there is some suggestion in Kim et al to make a zinc finger polypeptide containing three zinc finger domains, where the zinc finger domains are from the tables that describe the QSNR, QSNK and CSNR motifs. Furthermore, Kim et al teach the nucleic acid sequences to which these zinc fingers bind (see tables). Thus, one could predictably combine the zinc finger domains to bind to the nucleic acid sequence GAAGAAGAA, since each zinc finger domain is taught to preferentially bind the GAA sequence. Given the teachings of Kim et al and the skill of

Art Unit: 1636

one of ordinary skill in the art, one would have been motivated to select the QSNR, QSNK and CSNR motifs, in that order, to bind to the GAAGAAGAA sequence.

For these reasons, and the reasons made of record in the previous office actions, the rejection is maintained.

Conclusion

No claims are allowed.

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jennifer Dunston whose telephone number is 571-272-2916. The examiner can normally be reached on M-F, 9 am to 5 pm.

Art Unit: 1636

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Joseph Woitach can be reached at 571-272-0739. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Jennifer Dunston, Ph.D.
Examiner
Art Unit 1636

/JD/

/Daniel M Sullivan/
Primary Examiner, Art Unit 1636